

### TCI Telecomunicazioni S.r.l. General Information

TCI Telecomunicazioni Italia S.r.l. is part of the TCI Group, an international leader in the production and marketing of electrical and electronic equipment for industrial automation and digital communications and in the production and sale of electronic components for lighting.

The products covered by the present Product Environmental Profile are assembled in the plant located in in Via Parma 14, Saronno (VA), Italy.

For more details regarding TCI and the products cover by the PEP, visit <https://www.tci.it/>

Contact details for questions related to the PEP: [g.spalice@tci.it](mailto:g.spalice@tci.it)

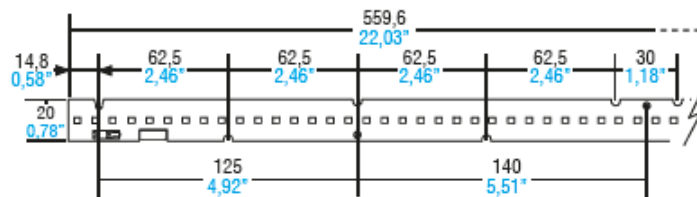
### Reference Product

Reference article

Linear module LED LM560/20E64 (article code 128082/840H)



**CRI** >80  
**Available (CCT)** 3000 K  
**colour temperature** 4000 K  
5000 K  
**Beam angle** 120 °  
**Ambient temperature ta** -40...+55 °C  
**Module temperature - tc** 85 °C  
**Absolute maximum operating current:** 640 mA



CCT K	Current mA	Flux tc 25°C lm	Flux tc 65°C lm	Power tc 65°C W	Efficacy tc 25°C lm/W	Efficacy tc 65°C lm/W	Vmin. tc 25°C @Imin	Vmax. tc 25°C @Imax
4000	500	3763	3478	33	168	158	44	47,8

**Lifetime** The brightness value of a LED module according to 60.000/80.000 working hours is indicated by letter L. Letter B indicates the number of LEDs that keep the L value also after 60.000/80.000 working hours. TCI LED modules are guaranteed L80B20. In other words the 80% of the LEDs will have 80% or higher rendering after 60.000/80.000 working hours.

**Control gear** MINI JOLLY DALI (article code 151403), a direct current dimmable electronic drivers with dip-switch manufactured by TCI Telecomunicazioni Italia S.r.l. (sold separately from the module LED). Technical Data Sheet available at <https://www.tci.it/prodotti/alimentatori-led/6279/dc-mini-jolly-dali/>

The modules are components to be incorporated into lighting equipment and cannot be used on their own or sold directly to the final market.

**Standards compliance** CSA-C22.2 no.250; EN 55015; EN 62031; EN 62471; IEC TR 62778; UL 8750

### Functional Unit

Provide lighting that delivers an outgoing artificial luminous flux of 1.000 lumens during a reference lifetime of 35.000 hours

### Products included in the PEP

The following series belong to the same homogeneous environmental family as the reference product.

## Linear Module LED

- **Linear module:** 128460/840BB LM1400/20E160 LM1400/20E160 (128460/840BB)
- **Rectangular module:** 122940/840AD SM270/270E66 SM270/270E66 (122940/840AD)

Product	Article code	Weight (g)	Packaging (g)	Power (W)	Lumen
Linear module	128460/840BB LM1400/20E160 LM1400/20E160 (128460/840BB)	94	9,6	56,0	8.911
Rectangular module	122940/840AD SM270/270E66 SM270/270E66 (122940/840AD)	227	11,1	21,7	3.353

Technical Data Sheet of the products included in the Environmental Profile available at <https://www.tci.it/>

## Materials and Substances

All useful measures have been adopted to ensure that the materials used in the composition of the product do not contain any substances banned by the legislation in force at the time of marketing.

Material type	Weight (g)	Share (%)
<b>Product</b>		
Printed circuit board	35,0	95,1%
Other	1,82	4,9%
<b>Packaging</b>		
Plastic	0,00100	0,0%
Paper	0,00400	0,0%
<b>Total mass of reference product : 36,8</b>		

## Manufacturing

These products are manufactured by TCI a site that has received an environmental certification ISO 14001. In consideration of the fact that all the production occurs in the site located in Italy, the Italian residual mix has been considered.

## Distribution

The products are distributed from TCI Telecomunicazioni Italia S.r.l. plant located in Via Parma 5, Saronno (VA), Italy. The Reference Product is mainly transported by road, for an average distance of 870 km, representative of a distribution in Europe. The packaging complies with the European Directive 2004/12/EC on packaging and on waste coming from packaging and the Italian transposition decree (Legislative Decree 152/06 and subsequent amendments).

## Installation

Installation processes:

The processes to install the product are not considered in this study because of their low impact compared to the other life cycles steps.

Installation elements (non delivered with the product):

- Standard connector
- Clip line (280 mm - 61 g)
- Methacrylate (PMMA) diffuser cover. Cover efficiency 90%. (1.400 mm)
- Clip and caps
- Screws
- Cable (5 m cable considered)

## Use and Maintenance

The module LED has a declared service life of 80.000 hours. During the service life, no maintenance or replacement of components is required.

## Linear Module LED

The driver has a declared service life of 10 years, provided that the appliance is used for 13 hours a day maximum. Under these conditions, the module LED service life will be achieved in 16,86 years. Therefore a driver replacement will be required.

The driver considered in the study features a DALI dimming (0/0,5 - 100 %) with a memory function.

In consideration of the fact that over 80% of the products are distributed to the European market, a European mix has been considered.

### End of Life

Considering the complexity and the lack of knowledge of the electric and electronic recycling channel and processes, the scenario set up by the PSR-0014-ed2.0-EN-2023 07 13 was used

### Environmental Impacts

Evaluation of the environmental impact covers the following life cycle stages: raw materials, manufacturing, distribution, installation, use and end of life (EoL). This environmental declaration has been developed by considering an outgoing artificial luminous flux of 1,000 lumens over a reference lifetime of 35,000 hours.

Software	Simapro 9.5
Database	Ecoinvent 3.9.1
Indicators set	Indicators for PEF EF 3.1 (Compliance: PEP ed.4, EN15804+A2) v2.0
Data reference year	2022
Geographical representativeness	Europe
Energy models	Manufacturing: Italian residual mix – Medium Voltage Use: European mix – Low Voltage

### Environmental Impact indicators

Indicator	Unit	Total	Manufacturing	Distribution	Installation	Use	End of Life
Climate change - total	kg,eq,CO2	2,26E+01	2,97E+00	4,41E-04	3,84E-01	1,92E+01	1,49E-03
Climate change - fossil fuels	kg,eq,CO2	2,24E+01	2,95E+00	4,41E-04	3,82E-01	1,91E+01	2,61E-04
Climate change - biogenics	kg,eq,CO2	1,12E-01	1,12E-02	2,30E-08	1,06E-03	9,87E-02	1,23E-03
Climate change - land use and land use transformation	kg,eq,CO2	5,32E-02	5,35E-03	1,49E-08	4,25E-04	4,74E-02	1,83E-07
Ozone depletion	kg,eq,CFC-11	7,07E-07	2,63E-07	6,07E-12	2,76E-08	4,17E-07	1,83E-12
Acidification (AP)	mole,eq,H+	1,30E-01	2,31E-02	3,67E-06	9,46E-03	9,73E-02	8,86E-07
Freshwater eutrophication	kg,eq,P	2,28E-02	4,15E-03	7,44E-09	6,81E-04	1,80E-02	6,82E-08
Marine aquatic eutrophication	kg,eq,N	2,19E-02	4,20E-03	1,03E-06	6,29E-04	1,71E-02	4,09E-06
Terrestrial eutrophication	mole,eq,N	2,02E-01	4,48E-02	1,12E-05	7,69E-03	1,50E-01	2,44E-06
Photochemical ozone formation	kg,eq,NMVOOC	6,36E-02	1,31E-02	3,36E-06	2,56E-03	4,79E-02	1,25E-06
Depletion of abiotic resources - elements	kg,eq,Sb	1,58E-03	1,14E-03	2,18E-11	1,01E-04	3,40E-04	9,03E-12
Depletion of abiotic resources - fossil fuels	MJ	4,82E+02	3,91E+01	5,73E-03	6,21E+00	4,36E+02	2,39E-03
Water requirement	m <sup>3</sup> ,eq,deprivation	5,30E+00	6,51E-01	7,55E-06	1,59E-01	4,49E+00	1,67E-05
Emission of fine particles	incidence of diseases	4,94E-07	1,57E-07	3,14E-11	3,36E-08	3,03E-07	1,21E-11
Ionizing radiation, human health	kBq,eq,U235	1,27E+01	3,54E-01	1,06E-06	2,90E-02	1,23E+01	1,35E-05
Ecotoxicity (fresh water)	CTUe	1,65E+02	8,73E+01	2,98E-03	1,01E+01	6,76E+01	6,19E-03
Human toxicity, carcinogenic effects	CTUh	7,33E-09	2,31E-09	3,97E-14	1,25E-09	3,77E-09	7,21E-14
Human toxicity, non-carcinogenic effects	CTUh	3,76E-07	1,13E-07	3,35E-12	1,05E-07	1,58E-07	4,16E-12
Impacts related to land use/soil quality	-	6,41E+01	6,34E+00	1,96E-05	2,59E+00	5,52E+01	5,11E-04

## Linear Module LED

### Biogenic Carbon

Product	Kg C
Module LED	0,00E+00
Packaging	2,82E-07

### Resource Use Indicators



Indicator	Unit	Total	Manufacturing	Distribution	Installation	Use	End of Life
Use of renewable primary energy, excluding renewable primary energy resources used as raw materials	MJ	9,89E+01	3,97E+00	8,61E-06	5,63E-01	9,44E+01	1,42E-04
Use of renewable primary energy resources used as raw materials	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)	MJ	9,89E+01	3,97E+00	8,61E-06	5,63E-01	9,44E+01	1,42E-04
Use of non-renewable primary energy, excluding non-renewable primary energy resources used as raw materials	MJ	5,06E+02	4,17E+01	6,09E-03	6,65E+00	4,58E+02	2,54E-03
Use of non-renewable primary energy resources used as raw materials	MJ	8,41E-05	8,41E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials)	MJ	5,06E+02	4,17E+01	6,09E-03	6,65E+00	4,58E+02	2,54E-03
Use of secondary materials	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of renewable secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of non-renewable secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Net use of fresh water	m <sup>3</sup>	5,13E+00	6,28E-01	7,49E-06	1,61E-01	4,34E+00	1,70E-05

### Inventory flows

Indicator	Unit	Total	Manufacturing	Distribution	Installation	Use	End of Life
Total use of primary energy during the life cycle	MJ	6,05E+02	4,57E+01	6,1E-03	7,22E+00	5,52E+02	2,68E-03
Hazardous waste disposed of	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Non-hazardous waste disposed of	kg						
Radioactive waste disposed of	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	2,94E-02	5,15E-03	0,00E+00	4,03E-03	0,00E+00	2,02E-02
Materials for energy recovery	kg	4,42E-04	0,00E+00	0,00E+00	4,42E-04	0,00E+00	0,00E+00
Exported energy	MJ by energy vector	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Biogenic carbon content of the product	kg of C	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Biogenic carbon content of the associated packaging	kg of C	2,82E-07	2,82E-07	0,00E+00	0,00E+00	0,00E+00	0,00E+00


### Extrapolation Coefficients

The extrapolation coefficients are given for the environmental impact of the FU, which is the emission of an outgoing artificial luminous flux of 1,000 lumens over 35,000 hours. For each life cycle stage, the environmental impacts of the product are calculated

	<h1>Product Environmental Profile</h1> <h2>Linear Module LED</h2>	
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by multiplying the reference product impacts of the declaration with the extrapolation coefficient. The "Total" column shall be calculated by adding the environmental impacts of each life cycle stage

Product	Article code	A1-A3; C1-C4	A4	B2	B6
Linear module	128460/840BB LM1400/20E160 LM1400/20E160 (128460/840BB)	6,79	6,79	2,85	7,25
Rectangular module	122940/840AD SM270/270E66 SM270/270E66 (122940/840AD)	2,51	2,51	1,07	1,06

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Verifier accreditation N°: VH40	Supplemented by PSR-0014-ed2.0-EN-2023 07 13
Date of issue: 09-2024	Information and reference documents: <a href="http://www.pep-ecopassport.org">www.pep-ecopassport.org</a>
Independent verification of the declaration and data, in compliance with ISO 14025 : 2006 Internal <input type="radio"/> External <input checked="" type="radio"/>	Validity period: 5 years
The PCR review was conducted by a panel of experts chaired by Julie Orgelet (DDemain)	
PEPs are compliant with XP C08-100-1:2016 or EN 50693:2019 The components of the present PEP may not be compared with components from any other program.	
Document complies with ISO 14025:2006 "Environmental labels and declarations. Type III environmental declarations"	